



Identifier Technology Health Indicators (ITHI) Update

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What's ITHI?

- A project initiated by ICANN
- The goal is to improve the security, stability and resilience of the Internet's unique identifier system, by developing metrics to measure the health of the unique identifier systems
- The RIRs have agreed to coordinate in development of metrics for the Internet Number Registry System
- The NRO Registration Services Coordination (RSCG) and Engineering Coordination Groups (ECG) have collaborated to develop initial set of metric definitions as a basis for community consultation and continue to work on the publication of measurement



<https://www.icann.org/ithi-faqs>



www.nro.net/ithi-project/

Status of RIRs collaboration for ITHI project

- Initial draft document on definition and risk – completed Dec 2016
- Indicators draft ITHI document – completed Q 1 2017
- Discussion draft for community consultation – completed Q4 2017
- Draft ITHI document to include feedback from community consultation – completed Feb 2018
- Final draft of ITHI document – completed May 2018
- ITHI measurement specification – completed Sep 2018
- Review and validation of data to be measured – in progress
- Current goal – Publication starts 1 Jan 2019 (on www.nro.net)

Scope of ITHI metrics for Internet Number Registries

- What is measured?
 - All Internet Number Resources (INRs) administered by each RIR (i.e. those included in the NRO “extended delegated” files)
 - INRs = IPv4, IPv6 and ASN blocks
- What is excluded?
 - Internet number resources reserved by IANA for special purposes, future delegations, etc
- Accurate data is defined as being
 - “Comprehensive” (complete and unique),
 - “Correct” and
 - “Current”

Comprehensive measurement: Complete (1)

- “All INRs administered by each RIR are accounted for”



Internet Assigned Numbers Authority

ipv4-address-space

Prefix	Designation	Date	WHOIS	RDAP
000/8	IANA - Local Identification	1981-09		
001/8	APNIC	2010-01	whois.apnic.net	https://rdap.apnic.net
002/8	RIPE NCC	2009-09	whois.ripe.net	https://rdap.ripe.net
003/8	Administered by ARIN	1994-05	whois.arin.net	https://rdap.arin.net
004/8	Level 3 Parent, LLC	1992-12	whois.arin.net	https://rdap.arin.net
005/8	RIPE NCC	2010-11	whois.ripe.net	https://rdap.ripe.net
006/8	Army Information Systems Center	1994-02	whois.arin.net	https://rdap.arin.net
007/8	Administered by ARIN	1995-04	whois.arin.net	https://rdap.arin.net



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arin|ZZ|asn|397213|2048|20180925|available||e-stats
iana|ZZ|asn|399261|4199600739|20180925|ianapool||iana
iana|ZZ|asn|4200000000|94967295|20130607|ietf|ietf|iana
iana|ZZ|asn|4294967295|1|20061129|ietf|ietf|iana
iana|ZZ|ipv4|0.0.0.0|16777216|19830101|ietf|ietf|iana
apnic|AU|ipv4|1.0.0.0|256|20110811|assigned|A91872ED|e-st
apnic|CN|ipv4|1.0.1.0|256|20110414|assigned|A92E1062|e-st
apnic|CN|ipv4|1.0.2.0|512|20110414|assigned|A92E1062|e-st
apnic|AU|ipv4|1.0.4.0|1024|20110412|assigned|A91C7138|e-st
apnic|CN|ipv4|1.0.8.0|2048|20110412|assigned|A92319D5|e-st
apnic|JP|ipv4|1.0.16.0|4096|20110412|assigned|A92D9378|e-st
apnic|CN|ipv4|1.0.32.0|8192|20110412|assigned|A92319D5|e-st
apnic|JP|ipv4|1.0.64.0|16384|20110412|assigned|A9252414|e-st
apnic|TH|ipv4|1.0.128.0|32768|20110408|assigned|A91CF4FE|e-st
apnic|CN|ipv4|1.1.0.0|256|20110414|assigned|A92E1062|e-st
apnic|AU|ipv4|1.1.1.0|256|20110811|assigned|A91872ED|e-st
    
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Measure coverage of each address block delegated by IANA to an RIR



Comprehensive measurement: Complete (2)

- “INRs registration data is available for all INRs accounted for”



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arin|zz|asn|397213|2048|20180925|available||e-stats
iana|zz|asn|399261|4199600739|20180925|ianapool||iana
iana|zz|asn|4200000000|94967295|20130607|ietf|ietf|iana
iana|zz|asn|4294967295|1|20061129|ietf|ietf|iana
iana|zz|ipv4|0.0.0.0|16777216|19830101|ietf|ietf|iana
apnic|AU|ipv4|1.0.0.0|256|20110811|assigned|A91872ED|e-
apnic|CN|ipv4|1.0.1.0|256|20110414|assigned|A92E1062|e-
apnic|CN|ipv4|1.0.2.0|512|20110414|assigned|A92E1062|e-
apnic|AU|ipv4|1.0.4.0|1024|20110412|assigned|A91C7138|e-
apnic|CN|ipv4|1.0.8.0|4096|20110412|assigned|A92319D5|e-
apnic|JP|ipv4|1.0.16.0|4096|20110412|assigned|A92D9378|e-
apnic|CN|ipv4|1.0.32.0|8192|20110412|assigned|A92319D5|e-
apnic|JP|ipv4|1.0.64.0|16384|20110412|assigned|A9252414|e-
apnic|TH|ipv4|1.0.128.0|32768|20110408|assigned|A91CF4FE|e-
apnic|CN|ipv4|1.1.0.0|256|20110414|assigned|A92E1062|e-
apnic|AU|ipv4|1.1.1.0|256|20110811|assigned|A91872ED|e-
```

```
$ whois -h whois.apnic.net -- '-r 1.0.8.0/21'
% [whois.apnic.net]
% Whois data copyright terms http://www.apnic.net/db/dbcopyright.html
% Information related to '1.0.8.0 - 1.0.15.255'
% Abuse contact for '1.0.8.0 - 1.0.15.255' is 'anti-spam@ns.chinanet.cn.net'
inetnum: 1.0.8.0 - 1.0.15.255
netname: CHINANET-GD
descr: CHINANET Guangdong province network
descr: Data Communication Division
descr: China Telecom
country: CN
admin-c: CH93-AP
tech-c: IC83-AP
status: ALLOCATED PORTABLE
notify: abuse_gdnoc@189.cn
```

Measure availability of contact and legal name data for each block



Comprehensive measurement: Unique

- *“INRs administered by each RIR are not duplicated”*



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arin|ZZ|asn|397213|2048|20180925|available||e-stats
iana|ZZ|asn|399261|4199600739|20180925|ianapool||iana
iana|ZZ|asn|420000000|94967295|20130607|ietf|ietf|iana
iana|ZZ|asn|4294967295|1|20061129|ietf|ietf|iana
iana|ZZ|ipv4|0.0.0.0|16777216|19830101|ietf|ietf|iana
apnic|AU|ipv4|1.0.0.0|256|20110811|assigned|A91872ED|e-st
apnic|CN|ipv4|1.0.1.0|256|20110414|assigned|A92E1062|e-st
apnic|CN|ipv4|1.0.2.0|512|20110414|assigned|A92E1062|e-st
apnic|AU|ipv4|1.0.4.0|1024|20110412|assigned|A91C7138|e-s
apnic|CN|ipv4|1.0.8.0|2048|20110412|assigned|A92319D5|e-s
apnic|JP|ipv4|1.0.16.0|4096|20110412|assigned|A92D9378|e-
apnic|CN|ipv4|1.0.32.0|8192|20110412|assigned|A92319D5|e-
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apnic|TH|ipv4|1.0.128.0|32768|20110408|assigned|A91CF4FE|
apnic|CN|ipv4|1.1.0.0|256|20110414|assigned|A92E1062|e-st
apnic|AU|ipv4|1.1.1.0|256|20110811|assigned|A91872ED|e-st
```

Ensure each resource is uniquely registered

Correct and current measurement

- *“The required registration data listed for the INRs holder matches official sources”*
 - Each RIR follows its regional policies and internal procedures to measure and verify the data
- *“The required registration contact data listed for the INR holder is a functioning and reachable relevant party”*

Measure the number of validated contact records

What's next?

- Each RIR's Registration Services team is working with their respective Engineering team to validate what data will be measured
- Engineering Coordination Group will finalize how the measurements will be taken and reported. They will determine the date that the first results will be completed

ITHI measurement metrics

	Definition	Measurement	Measurement Unit
Comprehensive	Complete (all required data is available)	All INRs administered by each RIR are accounted for in the NRO extended delegation statistics	<ul style="list-style-type: none"> X number of INRs administered missing out of total INRs in the NRO extended stats file Percentage of completeness translated by number above
		INRs registration / holdership data is available for all INRs accounted for in the NRO extended delegation statistics [1]	<ul style="list-style-type: none"> Legal Name and address = 50%, POC Information = 50% [2] Required holdership data: Legal name and associated legal address, point of contact (email, phone any of these)
	Unique (no duplicated data)	INRs administered by each RIR are not duplicated in the NRO extended delegation statistics	<ul style="list-style-type: none"> X number of INRs administered overlapping out of total INRs in the NRO extended stats file Percentage of completeness translated by number above
Correct	Matching official sources [4] for legal name and address	The required registration / holdership data listed for the INRs holder matches official sources	<ul style="list-style-type: none"> Legal name and address 50% of total correctness
	Functioning and reaching a relevant party	The required registration/holdership contact data listed for the INR holder is a functioning and reachable relevant party	<ul style="list-style-type: none"> Point of contact: email / phone 50% of total correctness
Current	Confirmed to be up to date or <i>recently</i> updated [5]	The required holdership data listed for the INR holder is confirmed to be up-to-date or updated [1]	<p>Give a weight to each data point to reach a total score out of 100%</p> <ul style="list-style-type: none"> 50% legal name and address 50% point of contact

Reference

More information on the NRO website

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